

REMARKS

Claims 4 and 6-9 are presently in the application. Claims 1-3 and 5 have been canceled.

Claims 4 and 7 have been amended to require that the projecting portion 52 includes a wide, flat surface portion which begins at the edge of the gate hole 51. Support for the amendment is found in original Fig. 2 of the drawings.

Claim 6 has been amended to require that only the circumference of the billet is covered by a steel sheet 0.2 to 0.5 mm thick and having a melting point higher than that of the semi-molten cast iron material. Support for the amendment is found at numerous locations in the original specification, for example, paras. 20, 25, and 32-34.

Claim 4 has been rejected under 35 USC 102(b) as clearly anticipated by Murayama et al (US 6,904,951) and under 35 USC 103(a) as unpatentable over Nakamura et al (US 6,053,997) in view of Murayama et al. Reconsideration of the rejections is requested.

Claim 4 requires that the projecting portion 52 includes a wide, flat surface portion which begins at the edge of the gate hole 51.

Murayama et al teaches (Fig. 1) a back-up unit 7 and a blade unit 4 having a scraper edge 41. The scraper edge 41 has a thin, tapering profile set back or spaced from the edge of the gate hole.

In contrast, claim 4 requires that the projecting portion 52 includes a wide, flat surface portion which begins at the edge of the gate hole 51.

To support a rejection of a claim under 35 U.S.C. 102(b), it must be shown that each element of the claim is found, either expressly described or under principles of inherency, in a single prior art reference. See Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984).

Murayama et al does teach a gate member having a projecting portion formed all around the gate hole facing the injection path, the projecting portion including a wide, flat surface portion which begins at the edge of the gate hole. Therefore, Murayama et al does not anticipate claim 4.

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Neither Nakamura et al nor Murayama et al teaches or suggests an apparatus for thixocasting a cast iron of the type recited in claim 4 including a projecting portion formed all around the gate hole facing the injection path, the projecting portion including a wide, flat surface portion which begins at the edge of the gate hole. Accordingly, claim 4 is not rendered obvious by the combined teachings of Nakamura et al and Murayama et al.

Further, claim 4 requires that the "gate . . . is taken out together with the casting after the injection casting operation is completed." No such teaching can be found in either Nakamura et al nor Murayama et al.

Still further, applicants' disclosed and claimed gate can remove the scale located at the distal end of the billet. The scraper edge 41 of Murayama et al cannot pull off the scale located at the distal end of the billet.

Claims 6 and 8 have been rejected under 35 USC 103(a) as unpatentable over Nobuhiro (JP 3-221,253). Reconsideration of the rejection is requested.

On page 4 of the Office action, the examiner finds that Nobuhiro teaches the step of covering a circumference of the semi-molten material prior to being injected through the gate by a copper sheet 0.1-0.5 mm thick and having a melting point higher than that of the semi-molten material. Based on the teachings in Nobuhiro, the examiner has concluded that if the molten material to be covered is iron, then the use of steel as the covering material would have been an obvious matter of design choice or routine experimentation. The examiner further finds that applicants' specification does not teach that the end faces of the billet are not covered.

The applicants respectfully disagree. Para. 55 of applicants' specification teaches that "... the scale formed on the circumference of the billet B is located at a position sufficiently far from the projecting portion 52" and "[i]n order to cause most of the scale located at the distal end of the billet B to stay" It is obvious from these two sentences that the "circumference" does not include the end faces of the billet.

Nobuhiro does not teach or suggest a method of type recited in claims 6 and 8, including the step of covering only a circumference of the billet made of the semi-molten cast

iron material. Therefore, Nobuhiro does not rendered obvious the subject matter of claims 6 and 8.

Claims 7 and 9 have been rejected under 35 USC 103(a) as unpatentable over Nobuhiro (JP 3-221,253) in view of Murayama et al and over Nobuhiro in view of Nakamura et al and Murayama et al.

Claims 7 and 9 are dependent on claim 6 and the arguments set forth above with regard to the rejection of claim 6 apply equally to claims 7 and 9. In addition, claim 7 requires the step of injecting the semi-molten cast iron material through a gate hole having a projecting portion formed all around the gate hole and facing the injection path, the projecting portion including a wide, flat surface portion which begins at the edge of the gate hole.

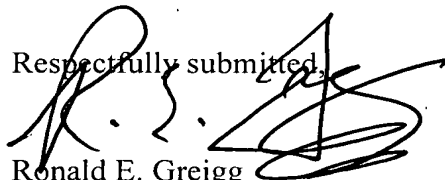
None of Nobuhiro, Nakamura et al and Murayama et al teaches or suggests a method for thixocasting a cast iron as recited in claims 7 and 9, including the step of injecting the semi-molten cast iron material through a gate hole having a projecting portion formed all around the gate hole and facing the injection path, the projecting portion including a wide, flat surface portion which begins at the edge of the gate hole. Accordingly, claims 7 and 9 are not rendered obvious by the combined teachings of Nobuhiro, Nakamura et al and Murayama et.

Please charge the fee for any necessary extension of time to deposit account No. 07-2100.

Appl. No. 10/569,511
Amdt. dated Oct. 29, 2007
Reply to Office action of July 6, 2007

Entry of the amendment and allowance of the application are respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'R. E. Greigg', with a large, stylized flourish at the end.

Ronald E. Greigg
Attorney for Applicants
Registration No. 31,517
CUSTOMER NO. 02119

GREIGG & GREIGG, P.L.L.C.
1423 Powhatan Street, Suite One
Alexandria, VA 22314

Tel. (703) 838-5500
Fax. (703) 838-5554

REG/JFG/ja

J:\Murota Patent Office\06.07\07-10-26, 569511, response to Jul 6, 07 OA.wpd